Small Business Innovation Research/Small Business Tech Transfer

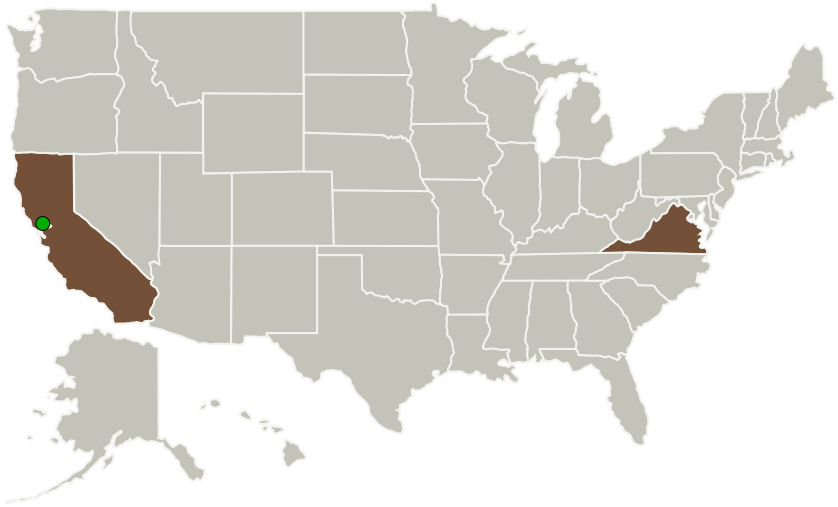
High Sensitivity, High Frequency Sensors for Hypervelocity Testing and Analysis, Phase II

Completed Technology Project (2017 - 2019)

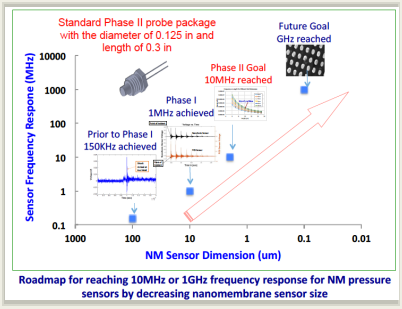
Project Introduction

This NASA Phase II SBIR program would develop high sensitivity, high frequency nanomembrane based surface sensors for hypervelocity testing and analysis on wind tunnel and shock tube models, using SOI (Silicon on Insulator) NM techniques in combination with our pioneering nanocomposite materials. Such low-modulus, conformal nanomembrane sensors with integrated interconnected elements and electronic devices can be applied to new or existing wind tunnel models for high frequency pressure analysis, as well as for detection of the shock front edge arrival in shock tube facilities. NanoSonic has demonstrated the feasibility of NM transducer materials in such sensors for the measurement of dynamic normal pressure using shock tube facility. Semiconductor NM sensors are thin, mechanically and chemically robust materials that may be patterned in two dimensions to create multi-sensor element arrays that can be embedded into small probe tips.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Nanosonic, Inc.	Lead Organization	Industry	Pembroke, Virginia
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California



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Primary U.S. Work Locations	
California	Virginia

Project Transitions

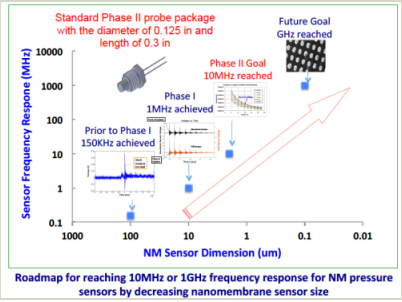
April 2017: Project Start

April 2019: Closed out

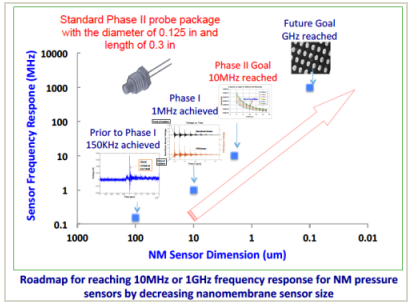
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140999)*

Images



Briefing Chart Image
High Sensitivity, High Frequency Sensors for Hypervelocity Testing and Analysis, Phase II Briefing Chart Image *(https://techport.nasa.gov/image/130356)*



Final Summary Chart Image
High Sensitivity, High Frequency Sensors for Hypervelocity Testing and Analysis, Phase II *(https://techport.nasa.gov/image/136098)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Nanosonic, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

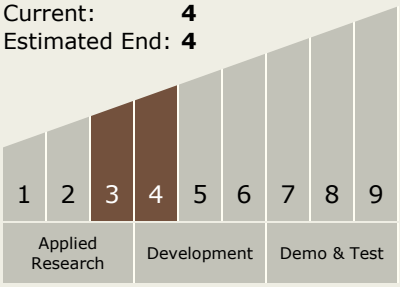
Carlos Torrez

Principal Investigator:

Hang Ruan

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - TX09.1 Aeroassist and Atmospheric Entry
    - TX09.1.1 Thermal Protection Systems

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System